Steering Committee
of the Imperial Valley Study Group
Minutes of June 2, 2005 Meeting

In attendance: Juan Carlos Sandoval, IID; Jeff Miller, CA ISO; Jonathan Woldemariam, SDG&E; Dana Cabbell, SCE; Vince Signorotti, CalEnergy; Jesse Ante, CPUC; Dave Olsen, CEERT/CEC. Carrie Downey, IID joined the meeting at 1:00 PM The meeting convened at 10:30 AM and adjourned at 3:50 PM. Minutes were recorded by Dave Olsen.

Drivers of Participation in IVSG: Steering Committee members briefly summarized their organizations' interests in this development planning effort. SDG&E has determined that it needs a new 500 kV connection to the grid, not only to maintain system reliability but to deliver renewable energy/meet RPS requirements and to reduce costs for its ratepayers. SDG&E is using the IVSG to help develop partnerships that can support the development and permitting of the transmission necessary to achieve these goals.

IID participation in the IVSG is driven by the need to meet its RPS commitment, and to export the 2,200 MW of proven geothermal reserves in Imperial Valley. IID has identified the upgrades of its system to support this export; the IVSG can help define a regional transmission plan for delivery of this power to other control areas. It can also help further its relationships with SDG&E and SCE in particular.

CalEnergy has made substantial investments over many years to determine the amount of commercially recoverable geothermal energy at the Salton Sea KGRA. Development of the steam fields and power plants to harness this energy depends on new transmission to provide access to regional markets. The CPUC, for its part, has determined that exporting renewable energy from the Imperial Valley will likely be necessary for meeting state RPS goals; it intends to proactively support efforts to do so.

The CA ISO participates in the IVSG to support state efforts to meet the RPS goal, and to help ensure that this is done at minimum cost. The ISO can help coordinate the necessary transmission development plans, as the costs of much of these facilities will be included in the ISO Transmission Access Charge. SCE observes that the flowability between its system and the SDG&E and IID systems is not high. How upgrades get paid for will be critical. For the company to invest its capital into any transmission project the parties will have to demonstrate that there is a benefit to SCE.

Development Phasing: CalEnergy's power sales forecast includes 645 MW of geothermal generation capacity on-line by end-2010. The new plants could be identified as Salton Sea units 7-9, with each unit 215 MW. (Salton Sea Unit 6 now in advanced development does not need new transmission capacity; its output will be absorbed on the IID system to meet Imperial Valley load). This forecast does not represent any commitment on the company's part, but is based on the status of discussions with potential customers now underway. Phase 1 could thus be defined as ~600 MW by 2010. Beyond 2010, CalEnergy can gear its power sales and project development to bring a 200 MW plant on-line every other year. The 600

MW in Phase 2 would thus be on-line by 2016 (plants on-line in 2012, 2014 and 2016). Phase 3, to bring total new geothermal build-out to 2,000 MW would take until 2024 on this schedule (200 MW plants on-line in 2018, 2020, 2022 and 2024).

IID presented a plan for phasing the development of transmission in ~600 MW increments.

- Phase 1 of such an approach could upgrade the IID/SCE Coachella-Devers corridor (Path 42) to 1600 MW TTC.
- Phase 2 could upgrade the IID system from Midway-Highline-El Centro-Imperial Valley, increasing that routing to 1600 MW TTC.
- Phase 3 would add a new connection from Banister to a new San Felipe 500 kV substation, and upgrade the IID line from Banister to El Centro and Banister to Avenue 58/Coachella; this would bring total export capability to 2,000 MW.
- Phase 4 would upgrade the IID F line, from Midway to Buck, and the line from Highline-Pilot Knob, both to 230 kV, to tie into the WAPA system at those substations. WAPA's ten-year plan calls for upgrading its regional system to 230 kV, which will require IID to upgrade at those points. These upgrades in a possible Phase 4 will provide export capacity beyond 2,000 MW.

After discussion, there was general agreement that IID's Phases 1 and 2 could be thought of as two alternatives for the first set of upgrades: Phase 1a could upgrade Path 42 (geothermal power connected to the IID system flowing north, to Devers); alternatively, Phase 1b could upgrade Midway-Highline-IV (geothermal power flowing south/west to the Imperial Valley substation and the proposed SDG&E 500 kV line from IV to San Felipe/San Diego county).

The Phase 1a plan would make geothermal power available to SDG&E only at Devers (or West of Devers, at SONGS or other SCE-SDG&E interconnection). Studies will be required to determine the feasibility of such delivery. In any case, SDG&E has determined that it cannot meet its RPS goal by 2010 without its proposed 500 kV line.

For the Path 42/Coachella-Ramon-Mirage-Devers upgrade, IID and SCE each own roughly half of the routing (SCE owns 100% of both lines from Mirage to Devers). Any upgrade could entail cost-sharing. Under the ISO tariff, cost responsibility for the upgrade could rest with the (geothermal) generator. It was suggested that the Renewable Energy Trunk Line approach developed by SCE for Tehachapi transmission (and now under consideration at FERC) might apply; but it is too early in the study process to take this up.

Jeff Miller observed that the IID system upgrades necessary to export power from the IID control area must be differentiated from other upgrades of the IID system that may not be needed for such a purpose.

There was general agreement that the proposed phases must be studied in sequence. Adding generation until thermal limits are reached will identify how the upgrades should be phased. How much new generation can be added in Phase 1 (with each routing) until the facilities become overloaded? The answer will help determine which of the Phase 1a or Phase 1b options can transfer more power, as well as identifying when the next phase of upgrades will be required.

The Phase 1a alternative would require completion of the Palo Verde-Devers 2 project and the West-of-Devers upgrades. Without those upgrades, the 600+MW of new Imperial Valley generation would not be deliverable.

The Steering Committee agreed to proceed with further study of these phases:

Phase 1: 600+MW, 2010. This will upgrade Phase 1a (Coachella-Devers); **or** Phase 1b, (Midway-Imperial Valley substation).
Phase 2: 600+MW, 2016. This will be whichever of the Phase 1a-b options is not built as Phase 1.
Phase 3: 800+MW, 2024.

Juan Carlos Sandoval will prepare maps summarizing these phases.

Queue Study Request: To trigger the studies of the phasing alternatives, CalEnergy should get in the SCE applications queue and request the delivery of 600 MW to the ISO grid. Generators connecting directly to the ISO grid have to go through the ISO queue. But SCE would consider (geothermal) generation connecting to the IID system as a *transmission expansion* request rather than a generator interconnection request. This is outside of the ISO queue process; applicants don't lose their queue positions if they don't immediately proceed to approval and construction.

To determine the feasibility of Phase 1a, SCE will have to study deliverability to SDG&E at Serrano and/or other points. The optimal way to study the phasing would be through a joint study involving SDG&E and IID as well as SCE. This would enable the Phase 1b alternative to be studied alongside Phase 1a, to determine which should be pursued first, their approximate costs, and how they might be combined or the phasing altered to be most cost-effective. To trigger a joint study, CalEnergy would have to get into the SDG&E and the IID applications queues as well as the SCE queue. SCE, SDG&E and IID may be able to use the 2014 Heavy Summer and Light Autumn base cases developed by the IVSG (with minor modifications, e.g., to include the generators now in the queue) for this joint study. This could save time and cost.

There are several large thermal and wind generating projects in the SCE applications queue now, but no geothermal projects. The timing of these projects is likely to affect the on-line dates of any geothermal development in the region. There was general agreement that this joint study would be key to determining the optimum way of phasing Imperial Valley geothermal/transmission development. CalEnergy will seek management approval for the cost of such studies.

Transmission Planning Studies of Final Alternatives: The Technical Work Group has completed stability studies on the final three alternatives under consideration, for both Heavy Summer and Light Autumn flows. The TWG will perform post-transient analyses of the alternatives, with the work to be done by a consultant retained by SDG&E; results should be available June 30. The three final alternatives export an aggregate of 2,000 MW from the IID control area. None of the IVSG studies to date look at the impacts of exporting smaller amounts of power in phases.

Permitting Work Group: The PWG is evaluating the possibility of organizing one CEQA/NEPA process for the entire 2,000 MW build-out. This could still support separate documents for the SDG&E 500 kV project and for the IID system upgrades. It remains to be determined whether upgrades on the SCE system should be included in the overall CEQA/NEPA project; the SCE study triggered by a CalEnergy request will likely be necessary to figure this out. At its next meeting, the PWG will work with BLM to identify transmission corridors for the overall IVSG project.

Next Meetings: we confirmed the following dates/times; Merrie Lamb of SDG&E will send call-in numbers for the phone meetings and room locations for the in-person meetings.

June 16, 2:00-4:00 PM. Phone meeting. This was originally set up as an all-day, in-person meeting; we changed it to a phone conference call.

June 29, 3:00-5:00 PM. The next in-person meeting of the Steering Committee will be immediately after the STEP meeting at Sempra (101 Ash St., San Diego) on June 29. The main agenda item will be ownership and operation of the proposed facilities.

July 20, 10:30-4:00 PM, in person meeting, at Sempra, 101 Ash St. if possible; location to be confirmed.

August 4, 9:00-12:30, in person, at Sempra (location to be confirmed). This meeting is right before the full IVSG meeting that afternoon.

August 24, 10:30-4:00 PM, in-person meeting at Sempra; location to be confirmed.

IVSG—Full Study Group (~50 people)

- **June 30**, 1:00-5:00 PM, at SANDAG. Just to confirm--this is all set.
- **August 4**, 1:00-5:00 PM, auditorium at Sempra, 101 Ash St. if possible; location to be confirmed.

The committee agreed that it would approve minutes of its meetings via e-mail within one week of meetings, after which the minutes will be posted on the IVSG website.